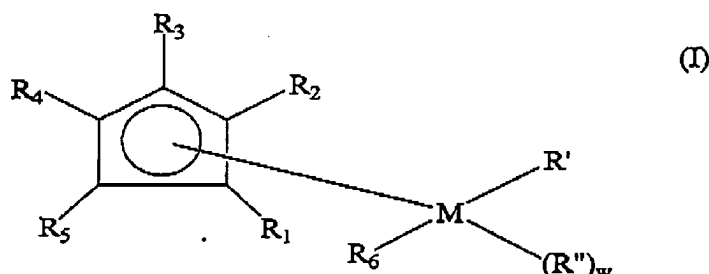


Application No. 10/668,288
Further to the Amendment filed July 6, 2004

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process for the hydrogenation of olefin double bonds present in polymers and copolymers of conjugated dienes, which comprises putting said polymer or copolymer of conjugated dienes in contact with hydrogen, in an inert solvent and in the presence of a catalytic system, wherein said catalytic system essentially consists of one or more titanium compounds defined by formula (I)



wherein:

M is selected from Ti(III), Ti(IV), or combinations thereof. ~~Ti with a valence of III and/or IV;~~

R'' is selected from (i) an organic or inorganic radical of an anionic nature, different from cyclopentadienyl or cyclopentadienyl substituted, or (ii) an oligomeric group having general formula (II);

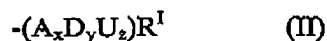
the groups R₁, R₂, R₃, R₄, R₅, each independently represent atoms or radicals linked to the cyclopentadienyl group coordinated to the metal M, and are selected from hydrogen, and any other suitable organic substituent, or inorganic substituent of said cyclopentadienyl group;

R₆ is selected from: (a) an inorganic anion, (b) a hydrocarbyl group having from 1 to 20 carbon atoms, or (c) R';

"w" has the value of 0 or 1, according to the valence of Titanium;

R' consists of an oligomeric group having the following formula (II):

Application No. 10/668,288
Further to the Amendment filed July 6, 2004



wherein:

A represents any monomeric unit derived from a vinylaromatic group polymerizable by means of anionic polymerization, having from 6 to 20 carbon atoms;

D represents any monomeric unit derived from a conjugated diolefin polymerizable by means of anionic polymerization, having from 4 to 20 carbon atoms;

U represents any generic ~~optional~~-monomeric unit derived from an unsaturated compound co-polymerizable with any of the above-mentioned conjugated diolefins D or vinylaromatic compounds A;

R^I represents a hydrocarbonyl group having from 1 to 20 carbon atoms,

any index "x" and "y" can be independently zero or an integer, provided the sum (x+y) is equal to or higher than 2;

"z" can be zero or an integer between 1 and 20.

Claim 2 (Previously Presented): The process according to claim 1, wherein the hydrocarbonyl group (b) of R_6 is a substituted or unsubstituted cyclopentadiene.

Claim 3 (Currently Amended): The process according to claim 1, wherein the D-type monomeric units in formula (II) ~~derive~~ derived from 1,3 diolefins having from 4 to 20 carbon atoms.

Claim 4 (Previously Presented): The process according to claim 3, wherein said 1,3 diolefin is selected from the group consisting of 1,3-butadiene, isoprene, 1,3-pentadiene, 2-methyl-1,3-pentadiene, 1,3-hexadiene, and combinations thereof.

Application No. 10/668,288
Further to the Amendment filed July 6, 2004

Claim 5 (Previously Presented): The process according to claim 4, wherein the 1,3-diolefin is selected from the group consisting of 1,3-butadiene, isoprene, and combinations thereof.

Claim 6 (Previously Presented): The process according to claim 1, wherein the monomeric units of the A-type in formula (II) are vinylaromatic compounds selected from the group consisting of styrene, α -methylstyrene, p-methylstyrene, vinyl naphthalene, and combinations thereof.

Claim 7 (Original): The process according to claim 6, wherein the vinylaromatic compound is styrene.

Claim 8 (Original): The process according to claim 1, wherein the sum (x+y) ranges from 2 to 50.

Claim 9 (Original): The process according to claim 1, wherein "z" in formula (II) is equal to zero.

Claim 10 (Original): The process according to claim 1, wherein "x" and "z" in formula (II) are both zero and the group R' consists of an oligomer of the conjugated diene D having an average polymerization degree ranging from 2 to 15.

Claim 11 (Original): The process according to claim 1, wherein the group R¹ in formula (II) represents an aliphatic, cycloaliphatic aromatic or alkyl aromatic group having from 2 to 10 carbons atoms.

Application No. 10/668,288
Further to the Amendment filed July 6, 2004

Claim 12 (Previously Presented): The process according to claim 11, wherein R^1 is selected from the group consisting of tert-butyl, n-butyl, isopropyl, and combinations thereof.

Claim 13 (Previously Presented): The process according to claim 1, wherein U is selected from the group consisting of an acrylic ester, a methacrylic ester, and combinations thereof.

Claim 14 (Previously Presented): The process according to claim 1, wherein the compound defined by formula (I) is selected from the group consisting of

- $\text{Cp}_2\text{Ti}[(\text{C}_5\text{H}_8)_2\text{C}_4\text{H}_9]$,
- $\text{Cp}_2\text{Ti}[(\text{C}_5\text{H}_8)_2\text{C}_4\text{H}_9]_3$,
- $\text{Cp}_2\text{Ti}[(\text{C}_5\text{H}_8)_5\text{C}_4\text{H}_9]$,
- $\text{Cp}_2\text{Ti}[(\text{C}_5\text{H}_8)_5\text{C}_4\text{H}_9]$,
- $\text{Cp}_2\text{Ti}[(\text{C}_5\text{H}_6)_5\text{C}_4\text{H}_9]$, and combinations thereof.

Claim 15 (Previously Presented): The process according to claim 1, wherein said process is carried out at a temperature ranging from 20°C to 200°C and a pressure of 1 to 50 bar.

Claim 16 (Original): The process according to claim 15, wherein the temperature ranges from 70°C to 160°C.

Application No. 10/668,288
Further to the Amendment filed July 6, 2004

Claim 17 (Previously Presented): The process according to claim 1, wherein the catalyst defined by formula (I) is present in quantities ranging from 50 to 150 ppm of titanium with respect to the (co)polymer to be hydrogenated.

Claim 18 (Original): The process according to claim 1, wherein the inert solvent contains a protic impurity scavenger in a maximum quantity of 1 mmole/l.

Claim 19 (Previously Presented): The process according to claim 18, wherein the scavenger is at least one aluminum alkyl.

Claim 20 (Original): The process according to claim 19, wherein the scavenger is $\text{Al}(\text{i-C}_4\text{H}_9)_3$.

Claim 21 (Currently Amended): The process according to claim 1, wherein the ~~polymers of~~ conjugated dienes of the polymers are selected from ~~polymers selected from the~~ group consisting of 1,3-butadiene, isoprene, 2,3-dimethyl-1,3-butadiene, 1,3-pentadiene, 2-methyl-1,3-pentadiene, 1,3-hexadiene, 4,5-diethyl-1,3-octadiene and 3-butyl-1,3-octadiene, and combinations thereof.

Claim 22 (Previously Presented): The process according to claim 21, wherein the conjugated dienes are selected from the group consisting of 1,3-butadiene, isoprene, and combinations thereof.

Application No. 10/668,288
Further to the Amendment filed July 6, 2004

Claim 23 (Currently Amended): The process according to claim 1, wherein the copolymers of conjugated dienes are selected from ~~comprise~~ copolymers between conjugated dienes and vinyl arenes.

Claim 24 (Original): The process according to claim 23, wherein the vinyl arene is styrene.

Claim 25 (Previously Presented): The process according to claim 23, wherein the copolymers of conjugated dienes are selected from the group consisting of styrene - isoprene - styrene rubber, and styrene - butadiene - styrene rubber, and combinations thereof.